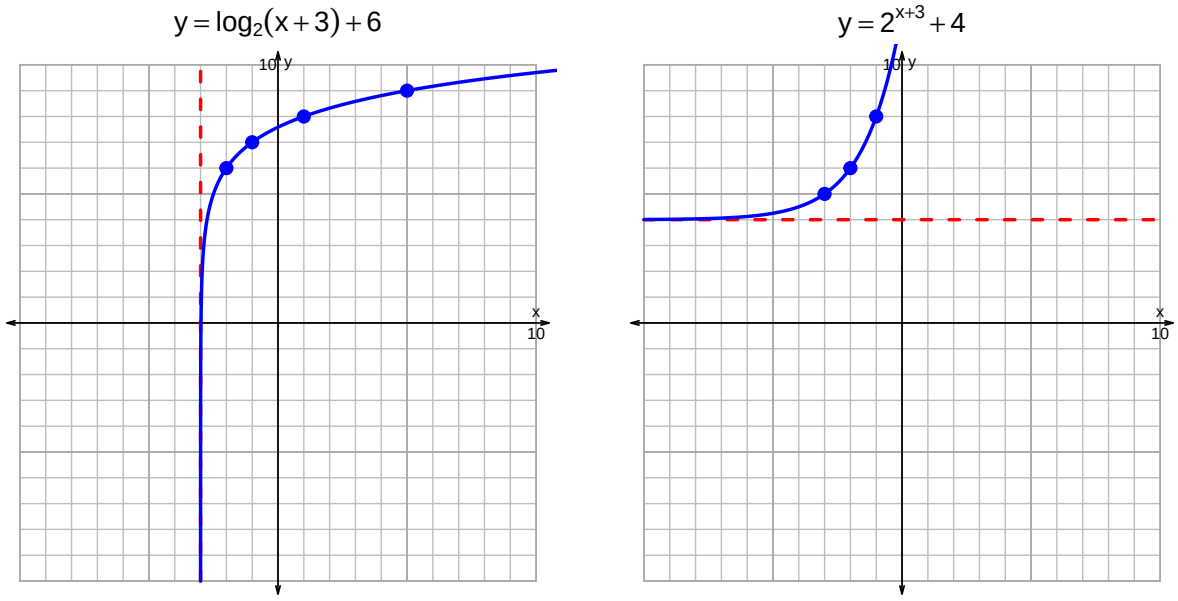
Name: Date:

S18QUIZ: EXP LOG (SLTN v273)

1. Graph $y = \log_2(x+3)+6$ and $y = 2^{x+3}+4$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-17 = \left(\frac{-7}{3}\right) \cdot 2^{5t/4}$$

Divide both sides by $\frac{-7}{3}$.

$$\frac{17 \cdot 3}{7} = 2^{5t/4}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{17 \cdot 3}{7}\right) = \frac{5t}{4}$$

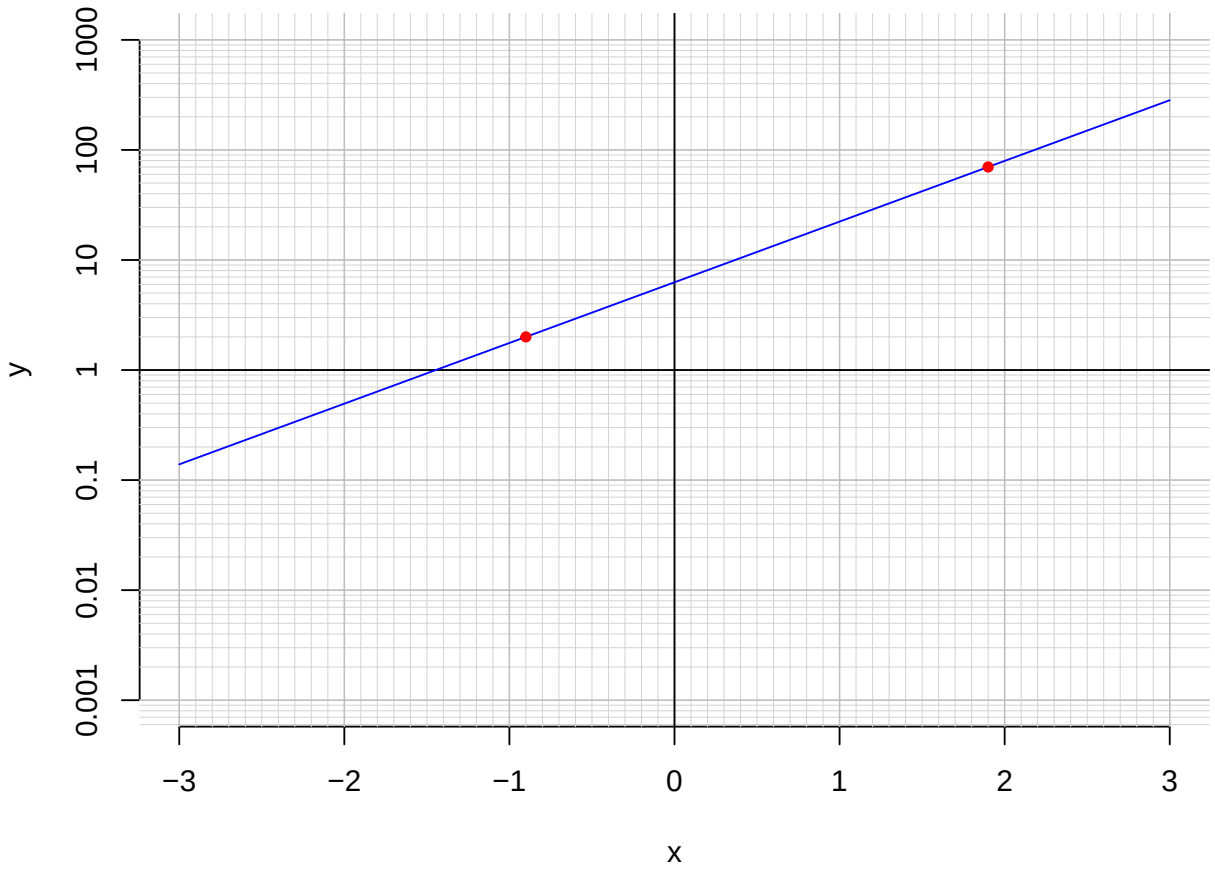
Divide both sides by $\frac{5}{4}$.

$$\frac{4}{5} \cdot \log_2\left(\frac{17 \cdot 3}{7}\right) = t$$

Switch sides.

$$t = \frac{4}{5} \cdot \log_2\left(\frac{17 \cdot 3}{7}\right)$$

3. An exponential function $f(x) = 6.27 \cdot e^{1.27x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-0.9)$.

$$f(-0.9) = 2$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{1.27} \cdot \ln\left(\frac{x}{6.27}\right)$$

c. Using the plot above, evaluate $f^{-1}(70)$.

$$f^{-1}(70) = 1.9$$